

AMENDMENTS TO THE CLAIMS:

*The following Listing of Claims will replace all prior versions, and listings, of claims in the application:*

LISTING OF CLAIMS:

1. (Currently Amended) A device for disinfecting operatory unit water and lines, comprising:

    a liquid source such as including a pressurized water line or a reservoir;

    an ozone generator using a corona discharge to produce an ozone containing gas;

    a protection system that prevents liquid from the liquid source from entering the ozone generator;

    an ozone mixing system that mixes and dissolves the ozone containing gas in the liquid;

    a continuous circulation system that continuously re-circulates the liquid containing dissolved ozone through a pressurized liquid circulation recirculation passageway connected to and providing liquid containing dissolved ozone to the operatory unit, said circulation system including a back pressure control regulator to maintain positive pressure sufficient to dispense the ozonated liquid from in the circulation recirculation passageway;

    a separation system that separates undissolved gas from the ozonated liquid prior to pressurizing and circulating the ozonated liquid through the circulation recirculation passageway;

    a reducing system that prevents ozone in the separated gas from escaping into the atmosphere during operation of the device by passing the gas through an ozone reducing material before venting to atmosphere;

    a liquid admitting system that inputs liquid from the liquid source into the mixing system to replace liquid output to the operatory unit; and

    a control system for controlling the device to operate as desired to produce liquid containing dissolved ozone and to circulate recirculate and output liquid

containing dissolved ozone, said control system further including an ozone sensor, located in said liquid recirculation passageway, the ozone sensor connected to said control system and said control system further connected to an alarm to indicate whether the device is operating properly.

2. (Previously Presented) The device of claim 1 wherein said pressure regulator is selected from the group consisting of: a pressure regulator, a pressure relief valve, and a flow controller.

3. (Currently Amended) The device of claim 1 wherein there is at least one connection in the pressurized liquid recirculation passageway for outputting liquid with dissolved ozone.

4. (Canceled)

5. (Previously Presented) The device of claim 1 wherein said ozone generator is of a capacity sufficient to generate more ozone than can be dissolved in the liquid flow.

6. (Canceled)

7. (Previously Presented) The device of claim 1 further including a positive pressure pump for further mixing the ozone containing gas with the liquid.

8. (Previously Presented) The device of claim 1 further including a static mixer for further mixing the ozone containing gas with the liquid.

9. (Previously Presented) The device of claim 1 further including a gas diffuser for mixing the ozone containing gas with the liquid.

10. (Original) The device of claim 1 wherein undissolved ozone containing gas is separated from the liquid by use of a porous hydrophobic material

11. (Original) The device of claim 1 wherein undissolved ozone containing gas is separated from the ozonated liquid at near atmospheric pressure.

12. (Previously Presented) The device of claim 1 further including a barrier preventing liquid from entering the ozone reducing material.

13. (Previously Presented) The device of claim 12 wherein said barrier includes a porous hydrophobic barrier.

14. (Original) The device of claim 1 wherein the source of the liquid provides pressure to circulate and output the ozonated liquid.

15. (Original) The device of claim 1 wherein a pump provides pressure to circulate and output the ozonated liquid.

16. (Currently Amended) The device of claim 1 further including a waste line, wherein said circulation system circulates the ozonated liquid through the pressurized liquid circulation recirculation passageway and liquid that is not output for use from said pressurized liquid circulation recirculation passageway is directed to the waste line.

17. (Previously Presented) The device of claim 16 further including a cuspidor draining into the waste line, wherein the ozonated liquid that is directed to a waste line is directed to rinse the cuspidor before entering the waste line.

18. (Original) The device of claim 1 wherein a pump for withdrawing liquid containing dissolved ozone from the ozone mixing system recirculates the liquid under pressure through a loop that conducts the liquid back to the ozone mixing system.

19. (Canceled)

20. (Previously Presented) The device of claim 1 wherein the ozone generator and ozone mixing system are responsive to the ozone sensor.

21. (Original) The device of claim 1 wherein a valve controls the rate of output flow of the ozonated liquid.

22. (Original) The device of claim 1 wherein a porous hydrophobic barrier is used to prevent liquid from entering the ozone generator.

23. (Previously Presented) The device of claim 1 wherein the ozone generator uses oxygen to produce an ozone containing gas and where the source of oxygen for the ozone generator is dried air supplied to the operatory unit.

24. (Currently Amended) The device of claim 1 further including a desiccant, wherein air is dried by the desiccant, and said desiccant is protected from exposure to moist air by valves that are closed when the device is not being operated.

25. (Previously Presented) The device of claim 1 wherein said control system is also responsive to a lack of supply water, for controlling at least the ozone generator and circulation system.

26. (Original) The device of claim 1 wherein a filter is installed in the liquid passageway.

27. (Previously Presented) The device of claim 1 further including a valved dispensing means wherein liquid containing dissolved ozone is recirculated through the valved dispensing means.

28. (Previously Presented) The device of claim 27 wherein the valved dispensing means is located as near as possible to the point of use and is responsive to air pressure.

29. (Currently Amended) The device of claim 28 further including a source of the air pressure, said source is connected to drive a turbine in a hand piece.

30. (Currently Amended) A device for disinfecting operatory unit water and lines, comprising:

a liquid source;

an ozone generator using a corona discharge to produce an ozone containing gas;

a protection system that prevents liquid from the liquid source from entering the ozone generator;

an ozone mixing system that mixes and dissolves the ozone containing gas in the liquid;

a re-circulation system, including a pressurized liquid circulation loop connected to the operatory unit, that circulates the liquid containing dissolved ozone through said pressurized liquid circulation loop and to the operatory unit, said circulation loop including a back pressure control to maintain pressure sufficient to dispense the ozonated liquid from the circulation loop at the operatory unit;

a separation system that separates undissolved gas from the ozonated liquid prior to pressurizing and circulating the ozonated liquid through the circulation passageway;

a reducing system that prevents ozone in the separated gas from escaping into the atmosphere by passing the gas through an ozone reducing material before venting;

a liquid admitting system that inputs liquid from the liquid source into the mixing system to replace liquid output to the operatory unit; and

a control system, controlling operation of the device and a sensor in communication with the control system, wherein liquid level in a treatment chamber is monitored by the sensor.

31. (Currently Amended) The device of claim 1 wherein the control system, in response to a period of non-use, automatically in response to sensing the system has not put out any liquid for a predetermined period of time, shuts turns the device off.

32. (Canceled).

33. (Currently Amended) The device of claim 1 further including an ozone sensor in said liquid circulation passageway, located in a return loop of said liquid circulation recirculation passageway after the operatory unit, the ozone sensor connected to said control system and an alarm to indicate whether the device is operating properly.

34. (Previously Presented) The device of claim 33 wherein the ozone generator and ozone mixing system are responsive to the ozone sensor in the continuous circulation system.

35. (New) A method for operating a device for disinfecting operatory unit water and lines, comprising:

generating ozone using a corona discharge ozone generator to produce an ozone containing gas;

preventing liquid from a liquid source from entering the ozone generator using a porous hydrophobic barrier that permits the ozone to pass therethrough;

mixing and dissolving the ozone containing gas in the liquid using an ozone mixing system that includes a pump;

concurrently recirculating the liquid containing dissolved ozone through a pressurized liquid recirculation passageway that includes a return loop connected to said mixing system and the operatory unit to conduct unused liquid to said ozone mixing system, thereby providing a regulated supply of liquid containing dissolved ozone to the operatory unit, said ozone mixing system thereby treating the unused liquid as well as any liquid from the liquid source;

separating undissolved ozone gas from the ozonated liquid prior to circulating the ozonated liquid through the recirculation passageway; and

passing the undissolved gas through an ozone reducing material before venting to atmosphere.